

WHAT IS CLAIMED IS:

1. A method for treating a disease or illness in a mammal, said method comprising administering to said mammal a composition comprising a compound in an amount effective to elicit a chemopreventative effect or a therapeutic effect or
5 a prophylactic effect or a chemoprotective effect, said compound having the formula:



wherein the stereochemical configuration of the alpha carbon is predominantly R-stereoisomer or is R-stereoisomer substantially free from the S-stereoisomer and

- 10 wherein A is an aliphatic moiety that is alkyl of 3 to about 30 carbon atoms, substituted alkyl of 3 to about 30 carbon atoms, alkene of 3 to about 30 carbon atoms and having from 1 to about 10 unsaturations, or substituted alkene having from 3 to about 30 carbon atoms and having from 1 to about 10 unsaturations, alkyne of 3 to about 30 carbon atoms and having from 1 to about 10 unsaturations,
15 or substituted alkyne having from 3 to about 30 carbon atoms and having from 1 to about 10 unsaturations, and wherein D is alkyl of 1 to about 10 carbon atoms, or a physiologically acceptable ester or salt thereof or a metabolic precursor thereof.

- 20 2. A method according to Claim 1 wherein said disease or illness is diabetes, obesity, inflammation, cystic fibrosis, dementia, or neoplastic disease.

3. A method according to Claim 1 wherein said mammal is a human.

- 25 4. A method according to Claim 1 wherein said composition is administered orally, transdermally, intravenously or by suppository.

- 30 5. A method according to Claim 1 wherein said composition is administered in an amount of from about 1.0 mg to about 10,000 mg per day in one or more doses.

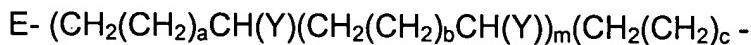
6. A method according to Claim 1 wherein said composition is administered in an amount of from about 10 mg to about 2000 mg once or twice a day.

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7. A method according to Claim 1 wherein said composition comprises a pharmaceutically acceptable carrier.

8. A method according to Claim 1 wherein A is selected from the group 10 consisting of C_nH_{2n+1} , C_nH_{2n-1} , C_nH_{2n-3} , and C_nH_{2n-5} wherein n is 3 to about 20 and wherein 1 to about 5 carbon atoms are optionally substituted with alkyl, branched alkyl, alkenyl, or alkynyl groups.

9. A method according to Claim 1 wherein A comprises a moiety of the 15 formula:

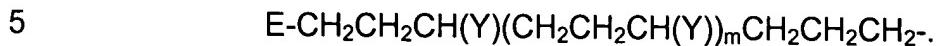


wherein m is 0 to 3 and wherein Y are independently alkyl having from 1 to about 10 carbon atoms and wherein the carbon atoms comprising the Y groups are independently R-enantiomer substantially free from S-enantiomer, S-enantiomer 20 substantially free from R-enantiomer, or one or more of the carbon atoms comprising the Y groups may be a combination of S-enantiomers and R-enantiomers and a, b and c are independently an integer of 1 to 5 and wherein the carbon atoms not comprising the Y groups may be substituted with one or more substituents and

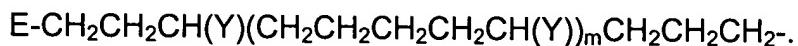
25 wherein E is an aliphatic moiety that is alkyl of 1 to about 20 carbon atoms, substituted alkyl of 1 to about 20 carbon atoms, alkene of 2 to about 20 carbon atoms and having from 1 to about 10 unsaturations, or substituted alkene having from 2 to about 20 carbon atoms and having from 1 to about 10 unsaturations, alkyne of 2 to about 20 carbon atoms and having from 1 to about 10 unsaturations,

or substituted alkyne having from 2 to about 20 carbon atoms and having from 1 to about 10 unsaturations.

10. A method according to Claim 10 wherein A comprises a moiety of the formula:



11. A method according to Claim 10 wherein A comprises a moiety of the formula:



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12. A method according to Claim 1 wherein said compound is R,R,R-phytanic acid or R,R,R-pristanic acid or a physiologically acceptable salt thereof or R,R,R-phytol as a metabolic precursor to R,R,R-phytanic acid and R,R,R-pristanic acid.

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13. A method for treating a disease or illness in a mammal, said method comprising administering to said mammal a composition comprising a compound in an amount effective to elicit a chemopreventative effect or a therapeutic effect or a prophylactic effect or a chemoprotective effect, said compound having the formula:



wherein the stereochemical configuration of the alpha carbon is predominantly R configuration or is R substantially free from the S configuration and wherein A' is an aliphatic moiety that is alkyl of 5 to about 20 carbon atoms, substituted alkyl of 5

25 to about 20 carbon atoms, alkene of 5 to about 20 carbon atoms and having from 1 to about 10 unsaturations, or substituted alkene having from 5 to about 20 carbon atoms and having from 1 to about 5 unsaturations, alkyne of 5 to about 20 carbon atoms and having from 1 to about 10 unsaturations, or substituted alkyne having from 5 to about 20 carbon atoms and having from 1 to about 5
30 unsaturations, and wherein D' is alkyl of 1 to about 5 carbon atoms,

or a physiologically acceptable ester or salt thereof or a metabolic precursor thereof.

14. A method according to Claim 13 wherein said disease or illness is a
5 metabolic disorder, inflammation, cystic fibrosis, dementia, or neoplastic disease.

15. A method according to Claim 13 wherein said mammal is a human.

16. A method according to Claim 13 wherein said composition is administered orally, transdermally, intravenously or by suppository.

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17. A method according to Claim 13 wherein said composition is administered in an amount of from about 1.0 mg to about 10,000 mg per day in one or more doses.

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18. A method according to Claim 13 wherein said composition is administered in an amount of from about 10 mg to about 2000 mg once or twice a day.

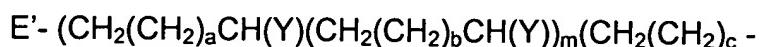
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19. A method according to Claim 13 wherein said composition comprises a pharmaceutically acceptable carrier.

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20. A method according to Claim 13 wherein A' is selected from the group consisting of C_nH_{2n+1} , C_nH_{2n-1} , C_nH_{2n-3} , and C_nH_{2n-5} wherein n is 5 to about 20 and wherein 1 to about 5 carbon atoms are optionally substituted with alkyl, branched alkyl, alkenyl, or alkynyl groups.

21. A method according to Claim 13 wherein A' comprises a moiety of the formula:



wherein m is 0 to 3 and wherein Y is independently alkyl having from 1 to about 5 carbon atoms and wherein the carbon atoms comprising the Y groups are independently R-enantiomer substantially free from S-enantiomer, S-enantiomer substantially free from R-enantiomer, or one or more of the carbon atoms 5 comprising the Y groups may be a combination of S-enantiomers and R-enantiomers and a, b and c are independently an integer of 1 to 5 and wherein the carbon atoms not comprising the Y groups may be substituted with one or more substituents and
wherein E' is an aliphatic moiety that is alkyl of 1 to about 12 carbon atoms, 10 substituted alkyl of 1 to about 12 carbon atoms, alkene of 2 to about 12 carbon atoms and having from 1 to about 5 unsaturations, or substituted alkene having from 2 to about 12 carbon atoms and having from 1 to about 5 unsaturations, alkyne of 2 to about 12 carbon atoms and having from 1 to about 5 unsaturations, or substituted alkyne having from 2 to about 12 carbon atoms and having from 1 to 15 about 5 unsaturations.

22. A method according to Claim 21 wherein A' comprises a moiety of the formula:



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23. A method according to Claim 21 wherein A' comprises a moiety of the formula:



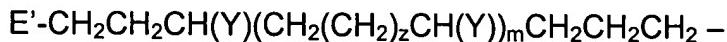
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24. A method according to Claim 21 wherein

25. A method according to Claim 21 wherein E' is selected from the group consisting of $\text{C}_n\text{H}_{2n+1}$, $\text{C}_n\text{H}_{2n-1}$, $\text{C}_n\text{H}_{2n-3}$, and $\text{C}_n\text{H}_{2n-5}$ wherein n is 1 to about 10 and wherein 1 to about 5 carbon atoms are optionally substituted with alkyl, 30 branched alkyl, alkenyl, or alkynyl groups.

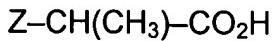
26. A method according to Claim 22 wherein E' is selected from the group consisting of C_nH_{2n+1} , C_nH_{2n-1} , C_nH_{2n-3} , and C_nH_{2n-5} wherein n is 1 to about 10 and wherein 1 to about 5 carbon atoms are optionally substituted with alkyl, 5 branched alkyl, alkenyl, or alkynyl groups and the like.

27. A method according to Claim 21 wherein A' comprises a moiety of the formula:



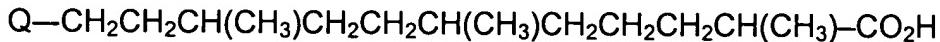
10 wherein m is 0 to 3 and z is 1, 3, 5, or 7 and wherein Y is independently alkyl having from 1 to about 5 carbon atoms and wherein the carbon atoms not comprising the Y groups are optionally substituted with one or more substituents.

28. A method according to Claim 13 wherein the compound has the 15 formula:



wherein the alpha carbon is predominantly R-enantiomer or is R-enantiomer substantially free from S-enantiomer and Z is an aliphatic carbon chain that is alkyl of 3 to about 10 carbon atoms, substituted alkyl of 3 to about 10 carbon atoms, 20 alkene of 3 to about 10 carbon atoms having 1 to 2 unsaturations, or substituted alkene having from 3 to about 10 carbon atoms having 1 to 2 unsaturations, alkyne of 3 to about 10 carbon atoms having 1 to 2 unsaturations, or substituted alkyne having from 3 to about 10 carbon atoms having 1 to 2 unsaturations.

25 29. A method according to Claim 13 wherein the compound has the formula:



wherein the carbon atom alpha to the carboxyl group is predominantly R-enantiomer or is R-enantiomer substantially free of S-enantiomer and the other 30 carbon atoms comprising the methyl groups are independently R-enantiomers

substantially free from S-enantiomers, S-enantiomers substantially free from R-enantiomers or mixtures thereof, and wherein Q is selected from the group consisting of alkyl of 1 to about 10 carbon atoms, substituted alkyl of 1 to about 10 carbon atoms, alkene of 2 to about 10 carbon atoms and having from 1 to about 3

5 unsaturations, or substituted alkene having from 2 to about 10 carbon atoms and having from 1 to about 3 unsaturations, alkyne of 2 to about 10 carbon atoms and having from 1 to about 3 unsaturations, or substituted alkyne having from 2 to about 10 carbon atoms and having from 1 to about 3 unsaturations.

10 30. A method according to Claim 29 wherein the compound has the formula:

$Q'-CH_2CH_2CH_2CH_2CH(CH_3)CH_2CH_2CH_2CH_2CH(CH_3)CH_2CH_2CH_2CH(CH_3)-CO_2H$
wherein the carbon atom alpha to the carboxyl group is predominantly R-enantiomer or is R-enantiomer substantially free of S-enantiomer and the other

15 carbon atoms comprising the methyl groups are independently R-enantiomers substantially free from S-enantiomers, S-enantiomers substantially free from R-enantiomers or mixtures thereof, and wherein Q' is selected from the group consisting of alkyl of 1 to about 6 carbon atoms, substituted alkyl of 1 to about 6 carbon atoms, alkene of 2 to about 6 carbon atoms and having from 1 to 2 unsaturations, or substituted alkene having from 2 to about 6 carbon atoms and having from 1 to 2 unsaturations, alkyne of 2 to about 6 carbon atoms and having from 1 to 2 unsaturations, or substituted alkyne having from 2 to about 6 carbon atoms and having from 1 to 2 unsaturations.

20 25 31. A method for treating a disease or illness in a mammal, said method comprising administering to said mammal a composition comprising an enantiomerically stable form of a compound in an amount effective to elicit a chemopreventative effect or a therapeutic effect or a prophylactic effect or a chemoprotective effect, said compound having the formula:

W-C(X)(D)-COOH

wherein X is alkyl of 1 to about 10 carbon atoms and D is alkyl of 1 to about 10 carbon atoms and wherein W is hydrogen or alkyl of 1 to about 30 carbon atoms, substituted alkyl of 1 to about 30 carbon atoms, alkene of 2 to about 30 carbon

5 atoms and having from 1 to about 10 unsaturations, or substituted alkene having from 2 to about 30 carbon atoms and having from 1 to about 10 unsaturations, alkyne of 2 to about 30 carbon atoms and having from 1 to about 10 unsaturations, or substituted alkyne having from 2 to about 30 carbon atoms and having from 1 to about 10 unsaturations or the pharmaceutically acceptable esters thereof or a

10 metabolic precursor thereof.

32. A method according to Claim 31 wherein X is methyl, D is methyl and W is hydrogen or alkyl of 1 to about 20 carbon atoms, substituted alkyl of 1 to about 20 carbon atoms, alkene of 2 to about 20 carbon atoms and having from 1 to 2 unsaturations, or substituted alkene having from 2 to about 20 carbon atoms and having 1 to 2 unsaturations, alkyne of 2 to about 20 carbon atoms and having 1 to 2 unsaturations, or substituted alkyne having from 2 to about 20 carbon atoms and having 1 to 2 unsaturations, or a physiologically acceptable ester thereof.

20 33. A method according to Claim 32 wherein W is hydrogen.